



Betker 7-1-3-12-5

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

Applicant(s): M.R. Betker et al.
Case: 7-1-3-12-5
Serial No.: 10/072,529
Filing Date: February 8, 2002
Group: 2191
Examiner: Satish Rampuria

I hereby certify that this paper is being deposited on this date with the U.S. Postal Service as first class mail addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Signature:

David L. Vulpis

Date: March 27, 2006

Title: Multiprocessor System with
Cache-Based Software Breakpoints

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicants request review of the final rejection, dated December 27, 2005, in the above-identified application. No amendments are being filed with this request. A Notice of Appeal is submitted concurrently herewith.

REMARKS

The present application was filed on February 8, 2002 with claims 1-12. Claims 1-12 are currently pending in the application. Claims 1, 11 and 12 are the independent claims.

In the final Office Action, claims 1-12 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,848,097 (hereinafter "Alverson") in view of U.S. Patent No. 6,615,368 (hereinafter "Dunlap").

The grounds for the §103(a) rejection in the final Office Action are identical to those presented in the prior non-final Office Action, dated July 1, 2005. Applicants previously traversed the §103(a) rejection in the Response to Office Action, dated September 29, 2005 (hereinafter "Prior Response"). Applicants continue to respectfully traverse the rejection and continue to maintain their arguments already of record.

For a valid §103(a) rejection, the combined references must teach or suggest all the claim limitations. Manual of Patent Examining Procedure (MPEP), Eighth Edition, August 2001, §2143. Applicants respectfully submit that this requirement has not been met with respect to independent claim 1.

Claim 1 sets forth:

A method of implementing a software breakpoint in a multiprocessor system having a plurality of processors each coupled to a main memory, each of the processors having an instruction cache associated therewith, the method comprising the steps of:

retrieving an instruction, for which the breakpoint is to be inserted, from a corresponding instruction address in the main memory;

inserting a breakpoint code at the instruction address in main memory; and

after the breakpoint code is executed by a given one of the processors, storing the retrieved instruction in the corresponding instruction cache for that processor and setting a use-once indicator associated with the instruction as stored in the corresponding instruction cache for that processor, wherein the use-once indicator, when set for the instruction as stored in the instruction cache, is operative via cache control logic to clear a validity indicator associated with the instruction after a single fetch of the instruction from the instruction cache, such that subsequent attempts by the given processor to access the instruction as stored in the instruction cache will cause the processor to retrieve the breakpoint code at the instruction address in main memory.

In formulating the §103(a) rejection of this claim, the Examiner argues that some elements contained in the portion of the claim beginning with the words “after the breakpoint code is executed” are described by Alverson at col. 15, lines 45-54 (Final Office Action, pp. 5 and 6). Applicants respectfully disagree and refer the Examiner to the rebuttal made in the Prior Response at pages 3 and 4.

In addition, the Examiner further argues that Dunlap’s change of flow (COF) flag describes the use-once indicator and the validity indicator in claim 1 (Final Office Action, p. 6, citing Dunlap at col. 6, lines 42-44 and 46-48). Applicants again respectfully disagree and refer the Examiner to the rebuttal made in the Prior Response at page 4.

Furthermore, in stating the motivation for combining aspects of Alverson with Dunlap, the Examiner states on p. 7 of the final Office Action:

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the method of setting a flag for the software breakpoint in the memory as taught by Dunlap into the method of implementing software breakpoint [*sic*] in a shared memory system as taught by Alverson. The modification would be obvious because of one of ordinary skill in the art would be motivated to have flags in a software breakpoint method to provide an optimize [*sic*] technique for debugging as suggested by Dunlap (col. 1, lines 51-61).

A prima facie case of obviousness can only be established if there is “some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings.” MPEP §2143. Any such showing of obviousness “must be based on objective evidence of record” rather than “subjective belief and unknown authority.” In re Sang-Su Lee, 277 F.3d 1338, 1343-44, 61 USPQ2d 1430 (Fed. Cir. 2002).

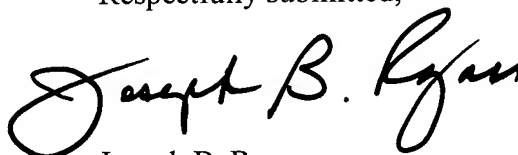
The Examiner’s above-quoted argument lacks any basis in objective evidence of record that would motivate one skilled in the art to combine the references as suggested. Instead, the Examiner has apparently used improper hindsight by using the Applicants’ teachings as a blueprint to hunt through the prior art for the claimed elements and combine them as claimed. The result is an argument to combine references that finds its motivation in advantageous aspects of the present

invention, namely, cache-based software breakpoints. The Federal Circuit has repeatedly held that such an approach is “an illogical and inappropriate process by which to determine patentability.” Sensonic, Inc. v. Aerosonic Corp., 81 F.3d 1566, 1570, 38 USPQ2d 1551, 1554 (Fed. Cir. 1996).

Dependent claims 2-10 are believed to be allowable for at least the reasons cited above with respect to claim 1. Independent claims 11 and 12 are system and computer program product claims, respectively, corresponding to method claim 1. Therefore, they are also believed to be allowable for reasons similar to those cited above.

In view of the above, Applicants believe that claims 1-12 are in condition for allowance and respectfully request withdrawal of the §103(a) rejection.

Respectfully submitted,

A handwritten signature in black ink that reads "Joseph B. Ryan". The signature is fluid and cursive, with the first name "Joseph" being more prominent than the last name "Ryan".

Date: March 27, 2006

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